

Introducing.... Probability



Vocabulary

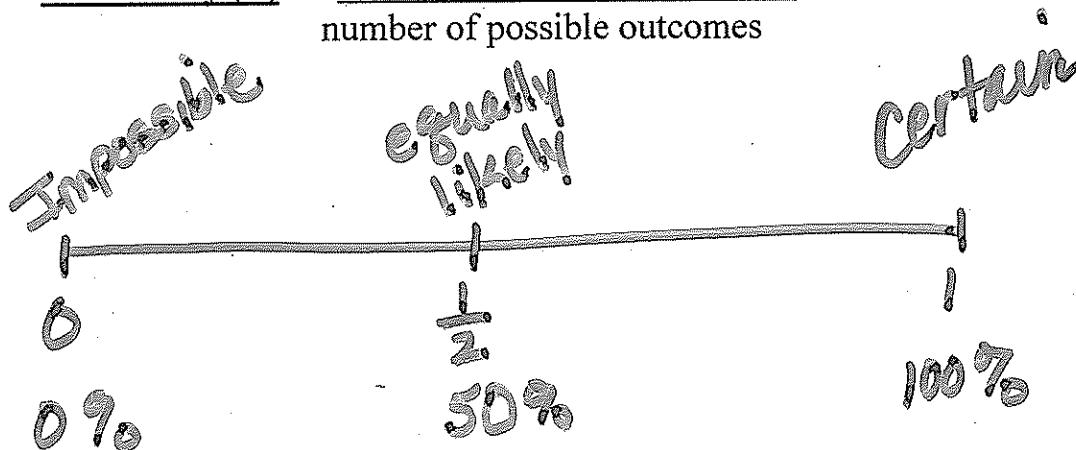
Outcome – possible result of an experiment

Event – collection of outcomes

Favorable outcomes – outcomes we want

Probability – the likelihood of a favorable outcome

Probability (P) = $\frac{\text{number of favorable outcomes}}{\text{number of possible outcomes}}$



EXAMPLES:

Finding probability:

You roll a number cube (die). Find the probability of rolling a 4.

$$P(4) = \frac{\text{favorable outcomes}}{\text{possible outcomes}} \quad P(4) = \frac{1}{6} = \frac{0.1\bar{6}}{1.00} = 17\%$$

Find the probability of rolling an even number.

$$p(\text{even number}) = \frac{3}{6} = \frac{1}{2} = 50\%$$

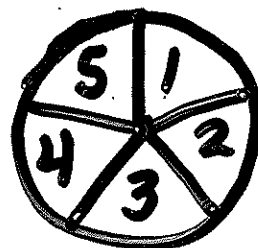
Describing Probabilities:

You spin a spinner and the outcomes on the spinner are equally likely. Find and describe the probability of an event.

You spin a "2".

$$P(2) = \frac{1}{5} = .2 = 20\%$$

Therefore, you are unlikely to spin a 2.



b) You spin an odd number.

$$P(\text{odd}) = \frac{3}{5} = .60 = 60\%$$

Therefore, you are likely to spin an odd number.

Complementary events: events that have no outcomes in common, but together they contain all possible outcomes

$$\text{sums} = 1 \text{ or } 100\%$$

A box holds 8 tiles labeled A, B, E, G, I, M, X, T. You randomly choose 1 tile.

a) Find the probability of choosing a consonant.

$$P(\text{consonant}) = \frac{5}{8}$$

b) Describe the complement of the above event and find its complement.

$P(\text{vowel}) = \frac{3}{8}$ ← fraction or %

uses words

What is a mathematical way to figure out a complement of an event?

- subtract the probability of the event from 1

Rule: $P(\text{not } A) = 1 - P(A)$ $P(A) + P(\text{not } A) = 1$

If chance of rain is 20%

$$P(\text{not rain}) = 1 - 20\% = 80\%$$

$$20\% + 80\% = 100\% \text{ or } 1$$